

## IN THE CLAIMS

1. (Presently amended) A method for diagnostic multicast crossbar switching in an integrated circuit (IC) digital communication relay device, the method comprising:

establishing a first and second input path in a bidirectional line switch ring system to receive communications from the bidirectional line switch ring system;

establishing a first and second output path in the bidirectional line switch ring system to supply communications to the bidirectional line switch ring system;

selectively passing communications from the first input to the first and second outputs;

selectively passing communications from the second input to the first and second outputs;

selectively decoding received communications by a forward error correction coding (FEC) operation; and

selectively encoding supplied communications by a FEC operation.

2. (Original) The method of claim 1 further comprising:

in a first mode of operation, decoding communications received at the first input, and supplying the decoded communications at the first output; and

encoding communications received at the second input and supplying the encoded communications at the second output.

3. (Original) The method of claim 1 further comprising:

in a second mode of operation, passing communications received at the first input to the first output; and

passing communications received at the second input to the second output.

4. (Original) The method of claim 1 further comprising:  
in a third mode of operation, passing communications received at the first  
input to the second output; and  
passing communications received at the second input to the first output.

5. (Original) The method of claim 1 further comprising:  
in a fourth mode of operation, passing communications received at the  
first input to the second output and to the first output.

6. (Original) The method of claim 1 further comprising:  
in a fifth mode of operation, passing communications received at the  
second input to the second output and to the first output.

7. (Original) The method of claim 1 further comprising:  
in a sixth mode of operation, decoding communications received at the  
first input;  
encoding the decoded communications; and  
supplying the encoded communications at the second output.

8. (Original) The method of claim 1 further comprising:  
in a seventh mode of operation, decoding communications received at the  
second input;  
encoding the decoded communications; and  
supplying the encoded communications at the first output.

9. (Original) The method of claim 1 further comprising:  
in an eighth mode of operation, decoding communications received at the  
first input;

encoding the decoded communications; and  
supplying the encoded communications at the first output.

10. (Original) The method of claim 1 further comprising:  
in a ninth mode of operation, decoding communications received at the  
second input;

encoding the decoded communications; and  
supplying the encoded communications at the second output.

11. (Original) The method of claim 1 further comprising:  
in a tenth mode of operation, encoding communications received at the  
first input;

decoding the encoded communications; and  
supplying the decoded communications at the first output.

12. (Original) The method of claim 1 further comprising:  
in an eleventh mode of operation, encoding communications received at  
the second input;

decoding the encoded communications; and  
supplying the decoded communications at the second output.

13. (Original) The method of claim 1 further comprising:

In a twelfth mode of operation, decoding communications received at the first input;

supplying decoded communications at the second output;

encoding the decoded communications; and

supplying the encoded communications at the first output.

14. (Original) The method of claim 1 further comprising:

In a thirteenth mode of operation, encoding communications received at the first input;

supplying encoded communications at the second output;

decoding the encoded communications; and

supplying the decoded communications at the first output.

15. (Presently amended) A method for diagnostic multicast crossbar switching in an integrated circuit (IC) digital communication relay device, the method comprising:

receiving a first communication from a first node in a bidirectional line switch ring system;

selectively decoding the first communication and supplying it to a second node in the bidirectional line switch ring system;

selectively passing the first communication to the second node;

selectively passing the first communication to the first node; and

selectively decoding the first communication by a forward error correction coding (FEC) operation, encoding the first communication by a forward error correction coding (FEC) operation, and supplying the first communication to the first node.

16. (Original) The method of claim 15 further comprising:  
receiving a second communication from the second node;  
selectively encoding the second communication and supplying it to the  
first node;  
selectively passing the second communication to the first node;  
selectively passing the second communication to the second node; and  
selectively encoding the second communication, decoding the second  
communication, and supplying the second communication to the second node.

17. (Original) The method of claim 16 in which the device  
includes an encoder and a decoder having inputs and outputs, in which the first node  
has input and output ports, and in which the second node has input and output ports;  
and  
wherein selectively decoding the first communication and supplying it to a  
second node includes connecting the first node output port to the decoder input and  
connecting the decoder output to the second node input port.

18. (Original) The method of claim 17 wherein selectively passing  
the first communication to the second node includes connecting the first node output port  
to the second node input port.

19. (Original) The method of claim 18 wherein selectively passing  
the first communication to the first node includes connecting the first node output port to  
the first node input port.

20. (Original) The method of claim 19 wherein selectively decoding the first communication, encoding the first communication, and supplying the first communication to the first node includes connecting the first node output port to the decoder input, connecting the decoder output to the encoder input, and connecting the encoder output to the first node input port.

21. (Original) The method of claim 20 wherein selectively encoding the second communication and supplying it to the first node includes connecting the second node output port to the encoder input and connecting the encoder output to the first node input port.

22. (Original) The method of claim 21 wherein selectively passing the second communication to the first node includes connecting the second node output port to the first node input port.

23. (Original) The method of claim 22 wherein selectively passing the second communication to the second node includes connecting the second node output port to the second node input port.

24. (Original) The method of claim 23 wherein selectively encoding the second communication, decoding the second communication, and supplying the second communication to the second node includes connecting the second node output port to the encoder input, connecting the encoder output to the decoder input, and connecting the decoder output to the second node input port.

25. (Presently amended) An integrated circuit (IC) digital communications relay device for diagnostic multicast crossbar switching, the device comprising:

a first input port;

a first output port;

a second input port;

a second output port;

a decoder for decoding and correcting forward error correction (FEC)-coded communications, the decoder having an input to accept said FEC-coded communications, the decoder having an output to supply FEC-decoded and forward error-corrected communications;

an encoder for FEC-coding communications, the encoder having an input, and the encoder having an output to supply FEC-coded communications ~~encoded with forward error correction (FEC);~~ and

a switch system connected to the first and second input ports, the first and second output ports, the input and output of the decoder, and the input and output of the encoder, the switch system having an input to accept switching commands for selectively ~~connecting~~ making connections among the first and second input ports, the first and second output ports, the input and output of the decoder, and the input and output of the encoder.

26. (Original) The device of claim 25 wherein the switch system accepts a first mode command and in response:

connects the first input port to the decoder input and the decoder output to the first output port; and

connects the second input port to the encoder input and the encoder output to the second output port.

27. (Original) The device of claim 25 wherein the switch system accepts a second mode command and in response:

connects the first input port to the first output port; and  
connects the second input port to the second output port.

28. (Original) The device of claim 25 wherein the switch system accepts a third mode command and in response:

connects the first input port to the second output port; and  
connects the second input port to the first output port.

29. (Original) The device of claim 25 wherein the switch system accepts a fourth mode command and in response:

connects the first input port to the second output port and to the first output port.

30. (Original) The device of claim 25 wherein the switch system accepts a fifth mode command and in response:

connects the second input port to the second output port and to the first output port.

31. (Original) The device of claim 25 wherein the switch system accepts a sixth mode command and in response:

connects the first input port to the decoder input;  
connects the decoder output to the encoder input; and  
connects the encoder output to the second output port.



32. (Original) The device of claim 25 wherein the switch system accepts a seventh mode command and in response:

connects the second input port to the decoder input;  
connects the decoder output to the encoder input; and  
connects the encoder output to the first output port.

33. (Original) The device of claim 25 wherein the switch system accepts an eighth mode command and in response:

connects the first input port to the decoder input;  
connects the decoder output to the encoder input; and  
connects the encoder output to the first output port.

34. (Original) The device of claim 25 wherein the switch system accepts a ninth mode command and in response:

connects the second input port to the decoder input;  
connects the decoder output to the encoder input; and  
connects the encoder output to the second output port.

35. (Original) The device of claim 25 wherein the switch system accepts a tenth mode command and in response:

connects the first input port to the encoder input;  
connects the encoder output to the decoder input; and  
connects the decoder output to the first output port.

36. (Original) The device of claim 25 wherein the switch system accepts an eleventh mode command and in response:

- connects the second input port to the encoder input;
- connects the encoder output to the decoder input; and
- connects the decoder output to the second output port.

37. (Original) The device of claim 25 wherein the switch system accepts an twelfth mode command and in response:

- connects the first input port to the decoder input;
- connects the decoder output to the encoder input and to the second output port; and
- connects the encoder output to the first output port.

38. (Original) The device of claim 25 wherein the switch system accepts an thirteenth mode command and in response:

- connects the first input port to the encoder input;
- connects the encoder output to the decoder input and to the second output port; and
- connects the decoder output to the first output port.